Information Theory—The Fourth London Symposium. Edited by COLIN CHERRY. Butterworths, London and Washington, 1961. pp 476. $16.50.

Collective volumes of the present type are a continuing source of embarrassment for the Book Review Editor. No single human could review them at all thoroughly and we have the most serious doubts about the efficiency of such a method of presenting new and interesting results. But of new and interesting results this book is full and no library of information theory would be complete without it. We must be content with motivating our recommendation by the hardly adequate procedure of reproducing the table of contents.

Coding and Detection Theory and Statistical Theory

A Linear Method of Construction of Error-Correcting Codes. By MILOSLAV DRIML
Coding for Two-Way Channels. By J. M. WOZENCRAFT AND M. HORSTEIN
Error-Correcting Codes from Linear Sequential Circuits. By N. M. ABRAMSON
Entropy and Metric Spaces. By C. RAJSKI
Error Bounds for Continuous Channels. By A. J. THOMASIAN
On Decoding Linear Error-Correcting Codes. By NEAL ZIERLER
A Self-Optimizing System of Coding. By A. M. ANDREW

Telecommunication Systems

Congestion in Telephone Exchanges. By R. SYSKI
Communication in Digital Systems. By IRWIN L. LEBOW
Optimum Receivers for Randomly Varying Channels. By THOMAS KAILATH

Human Reaction to Information

Weight of Evidence, Causality and False-Alarm Probabilities. By I. J. GOOD
Choice Reaction Time Experiments and Information Theory. By J. A. LEONARD
Information and Serial Order in Human Immediate Memory. By E. R. F. W. CROSSMAN
Hesitation and Information in Speech. By F. GOLDMAN-EISLER

Sensory Information and Biological Models

Sequential Observations by Human Observers of Signals in Noise. By J. A. SWETS AND D. M. GREEN
Short Term Storage of Information in Vision. By E. AVERBACH AND G. SPERLING
Binocular Depth Perception and Pattern Recognition. By BELA JULESZ
A Decision-Theory Approach to Sound Lateralization. By H. B. VOELCKER
Activity in Networks of Neuron-like Elements. By B. G. FARLEY AND W. A. CLARK
Neural Discharge Patterns in the Transmission of Sensory Information. By L. J. VIERNSTEIN AND R. G. GROSSMAN
A Model for Neurophysiological Functions. By H. ZEMANEK, H. KRETZ, AND A. J. ANGYAN

Learning Mechanisms and Other Artefacts

The Characterization of Cursive Writing. By MURRAY EDEN AND MORRIS HALLE
Machine Reading of Cursive Script. By L. S. FRISHKOPF AND L. D. HARMON
Adaptive Waveform Recognition. By C. V. JAKOWATZ, R. L. SHUEY AND G. M. WHITE
Task Simplification and Learning Devices. By J. HARTMANIS
Learning in Random Nets. By MARVIN MINSKY AND OLIVER G. SELFRIDGE
A Self-Optimizing Non-Linear Filter, Predictor and Simulator. By D. GABOR, W. P. L. WILBY AND R. WOODCOCK
Some Mathematical Models of Learning. By S. PAPERT

Classification Theory, Syntactics and Semantics

Basic Principles and Technical Variations in Sentence-Structure Determination. By D. G. HAYS
Experimental Study of 'Hypothesis-Formation' by Computer. By MANFRED KOCHEN
A Mathematical Theory of Discrete Classification. By SOLOMON W. GOLOMB
Documentary Classification as a Self-organizing System. By R. A. FAIRTHORNE
The Information Content of Biological Classifications. By A. RESCIGNO AND G. A. MACCACARO
The Description of Finite Sequential Processes. By KENNETH E. IVERSON
A New Model of Natural Language for Predictive Syntactic Analysis. By M. E. SHERRY AND A. G. OETTINGER
The Informational Analysis of Questions and Commands. By D. M. MACKAY

Book Review Editor

Aufzählbrakeit, Entscheidbarkeit, Berechenbarkeit. By H. HERMES. Springer-Verlag, Berlin; Göttingen; Heidelberg, 1961. 246 pp.

This charmingly written book is a carefully developed and didactically sound introduction to the theory of recursive functions. The basic concept is that of Turing machine. The author starts with an intuitive discussion of the notion "algorithm." He distinguishes between terminating (abbrechende) and non-terminating algorithms. Familiar examples are given for both kinds of algorithms. He emphasizes that algorithms operate on concrete objects such as "Steinchen," "Rechenpfennigen," "Holzkügelchen," or, as in mathematics, symbols.

Great care is taken to anticipate the reader's misconceptions and to guide him away from the frequent pitfalls of the novice to the subject. The following two quotes are typical.

On p. 44:

"Unperiodische Rechenvorgänge. Man könnte auf den ersten Blick glauben, dass jede nie stehenbleibende Turingmaschine, angesetzt auf das leere Band, nur periodische Vorgänge wiedergeben kann. Dazu liesse sich etwa die folgende Überlegung anstellen: Wenn man eine Maschine bei der Rechnung verfolgt, so werden dabei schrittweise gewisse Zeilen der Maschinentafel massgebend sein. Eine